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"Defense Industry Challenges and Opportunities"

**After Dinner Remarks of
The Under Secretary of Defense for Acquisition and Technology
Dr. Paul G. Kaminski**

**Silicon Valley Defense/Space Consortium
2nd Annual Silicon Valley Defense Acquisition Conference
Marriott Hotel, Santa Clara, California**

July 11, 1996

First let me remark how great it is to be back in the Bay area. It was nearly 25 years ago that I left Stanford University and Santa Clara County for what was then the Air Force's Space Division in Southern California. I was assigned to a program management office in Los Angeles.

After managing classified programs for five years, I left for a one-year assignment to Washington to go to a senior service school with the intent of going back to Los Angeles to run a large program that I had initiated. As I completed my school tour at the Industrial College of the Armed Forces, I met Bill Perry and began a relationship in 1977 that has now continued for almost 20 years.

During a portion of the intervening years, Bill Perry and I were in business together—helping to arrange strategic partnerships between large and small companies. This business, headquartered in Menlo Park, as well as the opportunity to serve on the boards of several companies with headquarters here gave me an opportunity to come back to this area on a regular basis.

DEFENSE BUDGET OUTLOOK

Tonight, I would like to share with you my perspective of where the defense budget is headed and the Department's plans for stretching the dollars that will be available to us.

As I see it, the pressure on defense spending will continue. The real value of defense spending has declined in each of the last eleven years since 1986—through the last three years of the Reagan Administration, through Desert Storm and the Bush Administration and now through the Clinton Administration. This trend began before the fall of the Berlin Wall and has spanned two Republican and one Democratic Administrations.

We plan to stabilize defense spending at the proposed 1997 level of around \$240 billion and then sustain small levels of real growth at about one percent per year. Some would say that this is too optimistic for at least three reasons.

First, we are facing a reduced threat. Think of it - the United States outspends the six next biggest military powers. Combined. And five of those six are our allies.

Second, the mandatory portion of our national budget—entitlements and the interest on the debt—are taking up a growing share of the federal budget. Put more starkly, these mandatory expenditures accounted for only 29.6 percent of the federal budget in 1963; in 2003, they will account for 72 percent of the budget.

And third, polling data indicates that the public desires further cuts in defense by a two-to-one margin. When posed with the question of what items in the budget should be cut, 72 percent of Americans responded that social security should not be cut and 64 percent responded that medicare should not be cut. At the same time, 74 percent responded that the interest on the debt should be cut and 64 percent responded that the defense budget should be cut.

I am not encouraged that recent short term Congressional adds to the defense budget are cause for much long term optimism. If we look at an out year forecast of the difference in budget authority set by the Congressional Budget Resolution with that of the President's Budget, there are near term Congressional adds to the budget, but the Congressional Budget Resolution provides less funding than the President's Budget (nearly \$10 billion less) after the year 2000.

These are the federal budget trends we are working with, and while we are planning for small levels of real growth—we are mindful of the need for maintaining a hedging posture and are executing a defense modernization strategy that is tuned to the larger economic and federal budget trends at work today.

The strategy we are executing has five components—I will tell you what the first three are and then talk about the last two. The first three seek to free up funds by reducing excess infrastructure, privatizing support functions and re-engineering our logistics system.

We have reduced our force structure by about a third since fiscal 1985, but the infrastructure supporting this smaller force has only come down about 18 percent. The program we have laid out through BRAC '95 will reduce the infrastructure by an additional 11% over the next few years. We need to do more privatization and outsourcing and take a fundamental look at our core competencies.

The need for re-engineering our logistics process stems from observations that there is a lot of "gold to be mined" here. For example, we plan to reduce our stock inventory levels from about \$107 billion to about \$55 billion between 1989 and 1999 — today we are slightly below \$70 billion. At the same time, we are able to reduce our costs for inventory storing and warehousing. Our inventory turns ratio is something like a quarter—not four. Our "Just-in-Case" system will need to move in the direction of becoming more like a "Just-in-Time" system.

Each one of these subjects—infrastructure, privatization, and logistics—could be a topic for a whole talk and something I will not go into detail tonight. Instead, I would like to discuss the two other elements of our overall strategy for stretching the defense modernization dollar—leveraging the commercial sector and leveraging the investment of our allies and reliable friends.

LEVERAGING THE COMMERCIAL SECTOR

I am seeing a growing opportunity to apply commercial technology and products to enhance military capability. In today's global economy, everyone, including our potential adversaries, will gain increasing access to the same commercial technology base. The military advantage will go to the nation which has the best cycle time to capture technologies that are commercially available; incorporate them in weapon systems; and field new operational capabilities.

In this environment, we have no choice but to move from separate industrial sectors for defense and commercial products to an integrated national industrial base. Leveraging commercial technological advances to create military advantage is critical to ensuring that our equipment remains affordable and the most advanced in the world.

We are already moving in the direction of not only using commercially developed technologies and co-producing defense items on commercial production lines—we are leasing commercial systems to support military operations. We are doing this today to support the NATO Implementation Force in Bosnia. I recently approved spending about \$80 million on an information-communications initiative to be sure we have superb command, control and communications systems for Operation JOINT ENDEAVOR.

This initiative is improving our communications capabilities in two ways: first, by using commercial TV satellite technology to provide a direct broadcast communications capability; and secondly, by fielding a wide bandwidth, secure tactical internet connection through fiber and commercial satellite transponders. These communications allow war planners and logisticians, on the ground in Bosnia, in the European Command Headquarters in Germany and back in the Pentagon to have access to the same data at the same time—this access is available to virtually anyone

with a 20 inch receive antenna, cryptologic equipment and authentication codes. We've designed the system in such a way that we are giving local commanders a 5000 mile remote control to select the programming that they receive over their 24 megabits-per-second downlinks from direct broadcast satellites.

There are many striking aspects to this Bosnia Info-Comm initiative. First, we're pushing hard to get the most advanced information capabilities to our forces, and we are succeeding. We've accomplished in four months what it normally takes ten years to do for a new system. Second, we are demonstrating our willingness to use—even to lease—commercial systems. And third, we are proving the need to possess system engineering and system integration skills. This expertise is crucial to developing the multiple application layer architectures needed to tailor information systems for defense needs.

The Bosnia information-communications initiative is not an isolated case. Increasingly, we are turning to commercial or dual-use technologies, products, and processes to improve the quality of our forces. As impressive as our military accomplishments were against Saddam Hussein, our forces are qualitatively superior today. The NATO combat operation preceding the Dayton Accords, Operation DELIBERATE FORCE, showed that—and gave us a hint of what combat will look like in the 21st century.

In DESERT STORM, only two percent of all weapons expended during the air war were precision guided munitions, or PGMs. In Bosnia, they accounted for over 90 percent of all ordnance expended by U.S. forces during Operation DELIBERATE FORCE. The bomb damage assessment photographs in Bosnia bear no resemblance to photos of the past where the target, often undamaged, is surrounded by craters. The photos from Bosnia usually showed one crater where the target used to be, with virtually no collateral damage.

We are moving closer to a situation known as "one target, one weapon." It was actually more than one—but less than two—weapons per target in Operation DELIBERATE FORCE. This has been the promise for the past 20 years, now it is becoming a reality. Our weapons focus now is to preserve accuracy while reducing cost; increasing standoff range; and providing all-weather capability. These are the major imperatives behind our development of systems like the all-weather Joint Direct Attack Munition (JDAM), the Joint Standoff Weapon (JSOW) and the Joint Advanced Standoff Strike Missile (JASSM).

A chess analogy is useful for explaining what this means for the changing nature of warfare. Today, precision weapons have now made it possible to take any piece on any square of the chessboard with no collateral damage to adjacent squares. Given this one target one weapon capability, commanders now need to know where all one's

forces are and where all the targets are on a very large chessboard—a 100 x 200 kilometer battlefield. This is analogous to seeing all the pieces on the chessboard—something we take for granted when playing chess. Imagine how fast you would win the game if you could see all the pieces on the board, but your opponent could see only his major pieces plus a few of your pawns. This is what it means to have "Dominant Battlefield Awareness."

To secure an overwhelming advantage, commanders will need C3 and planning tools to achieve something I call "Dominant Battle Cycle Time"—or the ability to act before an adversary can react. Back to the chess analogy, dominant battle cycle time would be, well, gaining an unfair advantage by continuing to move your pieces without giving your opponent a chance to move his. To do this on the battlefield, one must have superb command and control capability, fast transportation, and highly mobile maneuver forces.

In some leading-edge technologies critical to success on future battlefields, the commercial sectors of the economy have the advantage—I would include, for example, electronics, computers, information processing, and communications.

For these reasons, DoD is pursuing a dual-use strategy to break down the barriers between the commercial and defense industries; to realize the benefits of commercial-military integration in both research and development and in manufacturing; to increase the pace of innovation in defense systems; and to reduce the cost of such systems.

One of the principal objectives of our acquisition reform program is to open the defense market to commercial companies and technology—not only the primes, but sub-tier suppliers as well. I think one of the best examples of how acquisition reform is accomplishing these goals is military specification reform. With the reform of military specifications and standards, we have effectively turned our procurement system on its head. In the past, a program manager had to get a waiver in order to use commercial and performance standards. Now, the reverse is true. If a program manager wants to use military specifications, he must justify the extra cost.

A good example of the implementation of the Department's dual use strategy is DOD's investment in an electronic packaging technique—it is called Multi-Chip Modules or MCMs. MCMs take bare semiconductor die, and rather than packaging each chip in its own individual package, places multiple bare chips in a tightly packed format on a single substrate integrated into a single package or module. This electronic module provides fundamental advantages in reduced size, increased performance, and improved reliability over a group of individually packaged chips.

DOD was the early leader in advancing this technology. We pushed the technology for improved performance and smaller size and were willing to pay for it. We now expect MCM technology to find its way into more and more of our equipment. The advantages of MCMs are of critical importance in military applications like "smart" weapons and command and control systems. These advantages will also be important for future leadership in portable and mobile telecommunications and information processing for both the defense and commercial worlds. But, the primary factor now constraining more widespread usage is cost. MCMs are still too expensive for many applications. The most promising way to reduce the cost is to greatly increase production volumes. Our studies show that we can expect unit costs to come down by a factor of ten or more with large scale production.

Our strategy to increase commercial production seems to be working. In 1990 and 1991, there was virtually no commercial market. But we have already seen significant growth in commercial applications, so that commercial applications today are over half of total sales. The Department's current projections are that the market demand for MCMs will grow to several hundred millions of dollars by the turn of the century. And by the turn of the century, the DOD percentage of that market will drop to about ten percent of the total. As a result, the Department is able to buy off commercial MCM lines and capture savings in the prices DOD pays.

The President's fiscal year 1997 budget contains \$250 million to begin the Dual Use Applications Program and \$50 million for the Commercial Technology Insertion Program. Both programs are directed towards bringing the Department of Defense and commercial industry together. They are small-scale, low-cost programs that can help us move this country to a single, integrated industrial base. But we can't get there without Congressional support, and we can't mobilize Congressional support without the help of groups like this one. You are the natural constituency for programs like these – and we need your active support.

There are so many areas where DoD and commercial industry are working successfully together. There remain areas to improve, however, such as government-industry sponsored university research. A long term focus is needed. In the US today, universities are becoming the principal performers of long-term research. Industry and government are the major sponsors – with industry tending to be increasingly near-term oriented and government agencies tending to be longer-term oriented.

The Department of Defense is looking for a better way to fund and execute long term research and to leverage the strengths of government, industry, and the universities. The Department is sponsoring a new initiative...a "three-corner bank shot"...that calls for a three-way partnership between the government, industry, and universities. In this arrangement, funds are to be provided by both the government and industry for competitive awards to university centers. Government would insure that

research remained long term in nature. Industry would insure that the research had promise for delivering research products that could be used by industry to enhance their objectives.

A modest test case is currently underway at the Defense Advanced Research Projects Agency in the area of advanced lithography. The Semiconductor Technology Council has expressed a strong interest in this initiative. We are exploring others.

ARMAMENTS COOPERATION

This leads me to the second portion of my talk. I believe that national security – ours and that of our friends and allies, now and in the future, relies on getting the most for our combined investments in defense modernization.

In the post-Cold War world, we no longer face a single galvanizing threat such as the former Soviet Union. Instead, there is increased likelihood of our forces being committed to limited regional military actions – coalition operations – in which allies are important partners. Actually, it is the convergence of two trends – the increasing likelihood of committing forces to coalition operations and reduced defense budgets – that makes the case for greater armaments cooperation with friends and allies.

Deploying our forces in coalition operations with the forces of other nations places a high premium on interoperability. In this environment, it is important to ensure that our command and control systems are compatible and to be able to sustain the combined force through a common logistics support structure.

In addition to the economic and military reasons I have just cited, the United States seeks cooperation with its friends and allies for political reasons as well – these programs help strengthen the connective tissue – the military and industrial relationships that bind our nations in a strong security relationship. The interwoven political dimensions of defense trade and armaments cooperation are becoming increasingly important in a less predictable international security environment.

In this environment, it is clear to me that we will have to leverage the technology and industrial base of all our nations to modernize the equipment of our defense forces at an affordable cost and in the end – obtain “best value for the money.”

We need to avoid the inclination to duplicate each other’s capabilities. Instead, we need to think in terms of building on the capabilities we already have. To do this, we need to harmonize requirements from the start and increase the incentives for teaming of our industry – and this means removing the barriers to international teaming -- and the barriers to commercial industry, as well. We need to start doing this much earlier in the initial stages for our new programs.

Cooperation should focus on such coalition security needs as

- extended air defense,
- coordinated logistics,
- combat ID, and
- interoperable communications.

Effective industrial cooperation with the nations of the former Warsaw Pact nations creates some challenges. As a prelude to NATO membership, many of the Partnership for Peace nations would like to modernize their defense forces with equipment from the US and other Western European countries, but they are all facing tremendous economic pressures and simply don't have the capital to invest in weapon systems. Not only that, we and our allies are facing similar economic pressures, and that is the basic incentive for increased cooperation.

I saw these pressures first hand two months ago when I met with my counterparts from the Czech Republic, Hungary, Romania and Poland. But in all cases, we found opportunities to deepen our cooperative relationships.

Often, the defense industries of these countries are operating at a fraction of their capacity and are in need of work, but they don't have much of a market because their products are incompatible with Western standards. That problem is further exacerbated because the Western defense industry is also in the process of shedding its excess capacity. As a result, the Western defense industry is less willing to invest capital and technology in Central and Eastern European production capacity.

But this situation is changing. Economic reforms are starting to show some significant success, and there is a promise of investment by the militaries of the region in NATO compatible systems. American and western European companies are identifying excellent opportunities for joint ventures and are becoming more willing to invest capital and technology.

These industrial partnerships that are starting to form are enabled and supported by the strengthening of our political relationships over the past six years. The Partnership for Peace program has already exceeded our expectations.

One program that I am very optimistic about is the Regional Airspace Initiative, or RAI, in Central Europe. The goal of the RAI is air traffic control and air sovereignty systems that are interoperable region-wide to include NATO nations. Using commercial-off-the-shelf technologies and commercial standards, the RAI will help the Czech Republic, Hungary, Poland, Slovakia, and Romania modernize their systems.

In short, we are providing the tools to Partner industries to use in converting modern systems and standards. The industries in the United States and in NATO Europe are reaching out to the best and the brightest of their counterparts there. I am looking forward to their succeeding, for their success will serve to cement our friendships, and help build more bridges to broaden our relationships.

SUMMARY

In conclusion, my thoughts regarding the modernization of our nation's defenses can best be summed up as follows:

One, there will be continuing pressures to limit defense spending—for this reason, I am not optimistic about maintaining current spending levels, much less any significant increases in defense budgets.

Two, the Department of Defense is committed to "freeing up" additional resources by cutting excess infrastructure, privatizing support functions and re-engineering our logistics processes—looking across the defense program, though, I believe that these actions will generate enough investment funds to meet our needs.

Three, we need to pursue a realistic, long term strategy for stretching the defense modernization dollar—this must include leveraging the commercial sector as well as the industrial base of our allies and reliable friends.

Four, we have made substantial progress in moving from separate defense and commercial industrial sectors to an integrated national industrial base—but there is still much more to do—I need your help in convincing the Congress to support initiatives like the Dual Use Applications Program and the Commercial Technology Insertion Program.

And Five, greater armaments cooperation with our friends and allies will be necessary for promoting interoperability of coalition forces, for obtaining "best value for the dollar," and strengthening the connective tissue between our respective nations.

There is no single "silver bullet" that we can rely on to maintain the technological superiority of US forces at an affordable cost. Instead, we are going to pursue a deliberate, carefully crafted and multifaceted investment strategy to create a legacy for US forces in the year 2010.

Thank you all.